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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements relating to Resilient Upholstery Supports

We, PIRELLI LIMITED, a British Company of Pirelli House, 343/345 Euston Road, London, N.W.1. do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to resilient upholstery supports.

According to one aspect the present invention consists in a resilient upholstery support of elastomeric material which includes a main membrane and an auxiliary membrane, at least a peripheral margin of the auxiliary membrane being secured to the main membrane during and by cure of said elastomeric material so as to form an enclosed interspace between said two membranes and which further includes means formed in said platform which are adapted for the location and engagement of at least two fixing devices by means of which said platform can be mounted upon a frame.

Preferably, said interspace is subdivided into two or more portions.

Preferably also, means are provided which are adapted to provide intercommunication between at least two of said portions.

Further, it is preferred that at least the regions of said platform surrounding or adjacent said locating and engaging means are reinforced to prevent said fixing devices being torn out of said regions when said platform is mounted upon said frame and is supporting a load.

Said interspace is preferably filled with a gas or a liquid or a fluid-containing material such, for example, as latex foam, polyurethane or polystyrene. If a polyurethane or polystyrene material is used, it should be borne in mind that said material should be flexible and not hard or brittle as the material is to form part of a seat, divan or other article of furniture.

Said interspace further may be subdivided

[Price, ~~known~~]

in any desired manner either to form a plurality of pockets each of which is independent from the other in the sense that, for example, gas cannot leak from one pocket into the next, or to form a plurality of pneumatically connected pockets.

The main membrane is preferably disposed below the auxiliary membrane so that the auxiliary membrane is nearer the surface of the upholstery supported by the upholstery support than is the main membrane. A thickness of conventional upholstery material or materials may be disposed upon the auxiliary membrane and upon the rim of main membrane which projects or may if desired project beyond the auxiliary membrane in order to form a complete unit of upholstery.

The main membrane, which may, be of any shape in plan, is preferably reinforced in some manner at its edges or extremities in order to prevent whatever fixing devices are employed for securing the resilient upholstery support to the furniture frame from tearing through the main membrane when the support is supporting a load. Any reinforcing means may be employed, for example, the reinforcing means described, illustrated and claimed in United Kingdom Patent Specification No. 918,743. Further, holes may be pre-formed in the regions of such reinforcement for the purpose of facilitating the mounting of the platform on the furniture frame especially when hooks are used or fixing devices may be incorporated.

According to a second aspect, the present invention consists in a method of manufacture of a resilient upholstery support of elastomeric material which includes the following steps, namely, cutting to the required shape or shapes both a main membrane and an auxiliary membrane; laying said auxiliary membrane on said main membrane with means between said membranes which positively prevent contact between the entire surface of the auxiliary membrane and the corresponding area of

the adjacent surface of the main membrane; and curing said two membranes in a curing apparatus not only to cure the material or materials from which the membranes are made but also to join said main and auxiliary membranes together wherever contact between said membranes has not been positively prevented; means adapted for the location and engagement of at least two fixing devices (by means of which said support can be mounted upon a frame) being formed during said cure in said curing apparatus.

Preferably, reinforcements are incorporated before the component parts are inserted in said curing apparatus, said reinforcements or some of said reinforcements being disposed in such a manner that said reinforcements will be able to prevent said fixing devices being torn through the cured material or materials when said support is mounted upon said frame and is supporting a load.

Preferably also, valve means are incorporated.

Again, it is preferred that a material which will release a gas under the conditions of temperature and pressure within the curing apparatus during cure of said elastomeric material is introduced between the main and auxiliary membranes before the component parts are inserted in said curing apparatus.

Further, it is preferred that a material which includes a blowing agent (for example a sponge rubber material) and which during cure of said elastomeric material is converted into a cured, easily deformable, elastic material is introduced between the main and auxiliary membranes before the component parts are inserted in said curing apparatus.

Further, it is preferred that an enclosed quantity of a gas or liquid is introduced between the main and auxiliary membranes before the component parts are inserted in said curing apparatus.

The preferred but not exclusively preferred membrane material is rubber and the main membrane may be of any shape in plan and may be provided with thickened bracing portions to give improved anatomical support.

The present invention will now be more particularly described with reference to the accompanying drawings, in which:—

Figures 1 and 2 illustrate in plan and in cross-section, respectively, a first embodiment of the invention; and

Figures 3, 4 and 5, 6 illustrate in a similar manner two further embodiments of the invention.

Referring to Figures 1 and 2, there is illustrated a resilient upholstery support which includes a main membrane 10 and an auxiliary membrane 11, the peripheral margin indicated at 12 of the auxiliary membrane being secured to the main membrane so as to form an enclosed interspace 13 between said membrane 10, 11.

In Figures 3 and 4, there is illustrated a resilient upholstery support which includes a main membrane 20 and an auxiliary membrane 21, the peripheral margin indicated at 22 of said auxiliary membrane being secured to the main membrane so as to form an enclosed interspace between said two membranes 20, 21, said interspace being subdivided into a plurality of pockets 23 by the auxiliary membrane 21 being further secured to the main membrane 20 along lines 24.

In Figures 5 and 6, there is illustrated a resilient upholstery support which includes a main membrane 30 and an auxiliary membrane 31, the peripheral margin indicated at 32 of the auxiliary membrane being secured to the main membrane so as to form an enclosed interspace 33 between said membranes 30, 31. Padding material or materials 34 of any kind whatsoever and a covering 35 of upholstery material or materials are disposed over the auxiliary membrane 31 so as to form a seat squab 36, which may include any other components desired.

Each embodiment of the invention illustrated in Figures 1 to 6 includes holes 40 formed either at or adjacent to the periphery and corners of the main membrane (as in Figure 3) or in radial extensions or "fingers" 41 (as in Figure 1) or in less pronounced extensions 42 (in Figure 5). Said holes are preferably but not exclusively formed in pairs and are provided for location and engagement of fixing devices well-known in the art and which are used to connect platforms or individual tapes to seat frames.

The extensions 41 are illustrated by the dotted lines 50 near their radially outer ends as being reinforced in some manner. Such reinforcement may take any desired form; for example in accordance with the disclosure of United Kingdom Patent Specification No. 918,743.

Referring to Figures 3 and 4, the whole of the margin 60 of the main membrane 20 is reinforced with fabric material in known manner.

Referring to Figures 5 and 6, the main membrane 30 is formed with thickened bracing portions 70 to give improved anatomical support.

The enclosed interspaces 13, 23, 33 may be filled with a gas or a liquid or a fluid containing material such, for example, as latex foam, polyurethane or polystyrene, as stated earlier. The interspaces 23, being separate from and sealed with respect to one another may contain materials which differ from one interspace to another. Said interspaces 23 may, however, be pneumatically connected, by valves or holes for example, to one another.

The various minor integers hereinbefore described (reinforcements, disposition of pre-formed holes, valves for the admission of gases or fluids into said interspaces, bracing

portions) can be omitted, combined or modified to suit specific requirements, conditions of use, loads to be supported, etc.

15 The method of manufacture includes the steps of forming the main and auxiliary membranes from unvulcanised rubber sections; incorporating suspension reinforcement devices and/or materials (if any); placing the main and auxiliary membranes one on top of the
10 other separated by means for preventing contact between the whole of the area of one surface of the auxiliary membrane and the adjacent surface of the main membrane during vulcanisation; inserting the two membranes, thus disposed and separated, into a curing
15 apparatus.

The method further optionally includes, dependent upon the form of product desired, incorporating valve means to enable inflation
20 of the inflatable portion or portions of the platform to be effected after removal of said platform from the curing apparatus; or introducing between the rubber sections prior to vulcanisation or cure, a material which will release a gas under the conditions of temperature and pressure in the curing apparatus; or
25 introducing between the rubber sections prior to vulcanisation or cure a material which includes a blowing agent (for example a sponge rubber material), said material during vulcanisation or cure being converted into a cured, easily deformable elastic material enclosed in the interspace or interspaces between the main
30 and auxiliary membranes; or the introduction of a valve capable of permitting admission of a fluid or fluids into the formed interspace or interspaces; or introducing between the rubber sections prior to vulcanisation or cure of an enclosed quantity of a gas or liquid, said gas or liquid being enclosed by a material
40 which has properties which will enable the "package" to take the shape of the interspace to be formed during vulcanisation or cure and which will not be injurious to the elastomeric material or materials from which the main and auxiliary membranes are formed. In the mentioned cases of a material which will release a gas or of a material which includes
45 a blowing agent, said materials are preferably also inserted between two sheets of Cellophane (Registered Trade Mark) or between a sheet of Cellophane and a surface of the main or auxiliary membrane. In the case of the enclosed quantity of a gas or liquid, the sheet or sheets of Cellophane could be dispensed
50 with, the "package" being formed for example from heat-sealed Cellophane or P.V.C. or from partially cured elastomeric material.

The main and auxiliary membranes may be made from the same material or from different materials. The obvious preferred material is natural rubber but any other elastomeric material may be employed.

WHAT WE CLAIM IS:—

65 1. A resilient upholstery support of elastomeric material which includes a main membrane and an auxiliary membrane, at least a peripheral margin of the auxiliary membrane being secured to the main membrane during
70 and by cure of said elastomeric material so as to form an enclosed interspace between said two membranes and which further includes means formed in said platform which are adapted for the location and engagement of
75 at least two fixing devices by means of which said platform can be mounted upon a frame.

2. A support as claimed in Claim 1, wherein the interspace is subdivided into two or more portions.

3. A support as claimed in Claim 2, wherein there are means which are adapted to provide intercommunication between at least two of said portions.

4. A support as claimed in any preceding claim, wherein at least the regions of said platform surrounding or adjacent said locating and engaging means are reinforced to prevent said fixing devices being torn out of said regions when said platform is mounted upon said frame and is supporting a load.

5. A support as claimed in any preceding claim, wherein said platform has thickened bracing portions.

6. A support as claimed in any preceding claim, wherein said interspace contains a fluid.

7. A support as claimed in Claim 6, wherein the fluid is a liquid.

8. A support as claimed in Claim 6, wherein the fluid is a gas.

9. A support as claimed in Claim 1 or Claim 2 or as claimed in Claim 4 or Claim 5 when appended to Claim 1 or Claim 2, wherein said interspace contains a solid material which is easily deformable and elastic.

10. A method of manufacture of a resilient upholstery support of elastomeric material which includes the following steps, namely, cutting to the required shape or shapes both a main membrane and an auxiliary membrane; laying said auxiliary membrane on said membrane with means between said membranes which positively prevent contact between the entire surface of the auxiliary membrane and the corresponding area of the adjacent surface of the main membrane; and curing said two membranes in a curing apparatus not only to cure the material or materials from which the membranes are made but also to join said main and auxiliary membranes together wherever contact between said membranes has not been positively prevented; means adapted for the location and engagement of at least two fixing devices (by means of which said support can be mounted upon a frame) being formed during said cure in said curing apparatus.

11. A method as claimed in Claim 10, wherein reinforcements are incorporated before the component parts are inserted in said curing

- apparatus, said reinforcements or some of said reinforcements being disposed in such a manner that said reinforcements will be able to prevent said fixing devices being torn through the cured material or materials when said support is mounted upon said frame and is supporting a load.
- 5 12. A method as claimed in Claim 10 or Claim 11 wherein valve means are incorporated before the component parts are inserted in said curing apparatus.
- 10 13. A method as claimed in Claim 10 or Claim 11, wherein a material which will release a gas under the conditions of temperature and pressure within the curing apparatus during cure of said elastomeric material is introduced between the main and auxiliary membranes before the component parts are inserted in said curing apparatus.
- 15 14. A method as claimed in Claim 10 or Claim 11, wherein a material which includes a blowing agent (for example a sponge rubber material) and which during cure of said elastomeric material is converted into a cured, easily deformable, elastic material is introduced between the main and auxiliary membranes before the component parts are inserted in said curing apparatus.
- 20 25 15. A method as claimed in Claim 10 or Claim 11, wherein an enclosed quantity of a gas or liquid is introduced between the main and auxiliary membranes before the component parts are inserted in said curing apparatus.
- 30 16. A method of manufacturing a resilient upholstery support substantially as hereinbefore described with reference to Figures 1 and 2 or to Figures 3 and 4 or to Figures 5 and 6 of the accompanying drawings.
- 35 17. A resilient upholstery support when made in accordance with the method claimed in any of Claims 10 to 16.
- 40 18. A resilient upholstery support constructed, arranged and adapted to operate substantially as hereinbefore described with reference to Figures 1 and 2 or to Figures 3 and 4 or to Figures 5 and 6 of the accompanying drawings.
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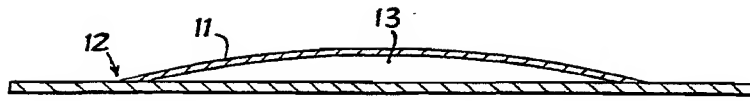


Fig. 2.

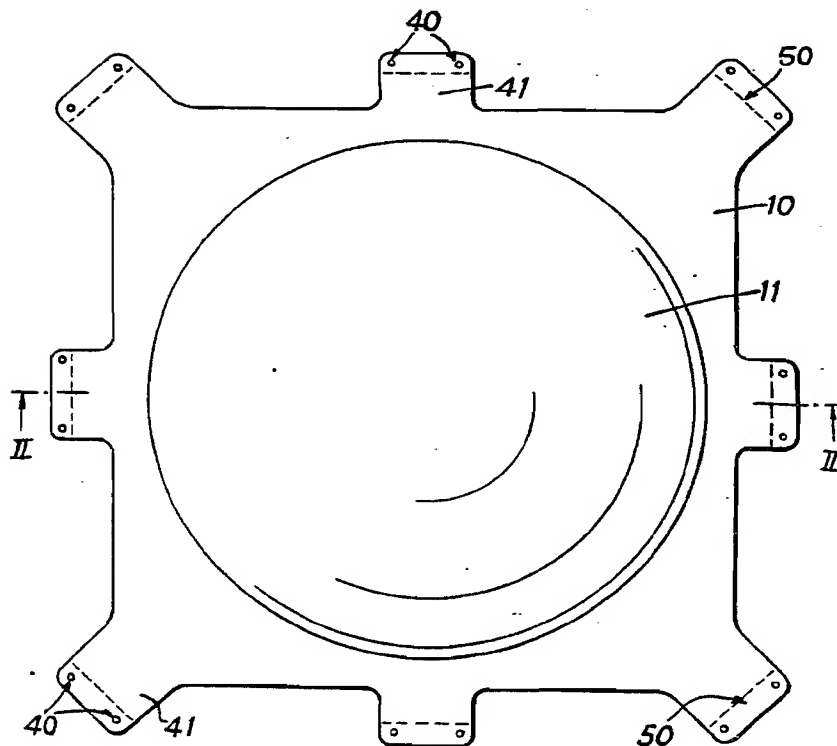


Fig. 1.

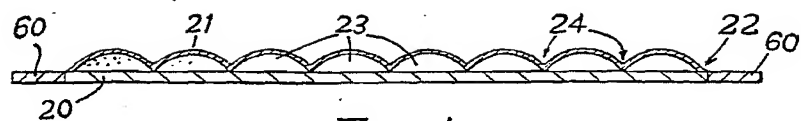


Fig. 4.

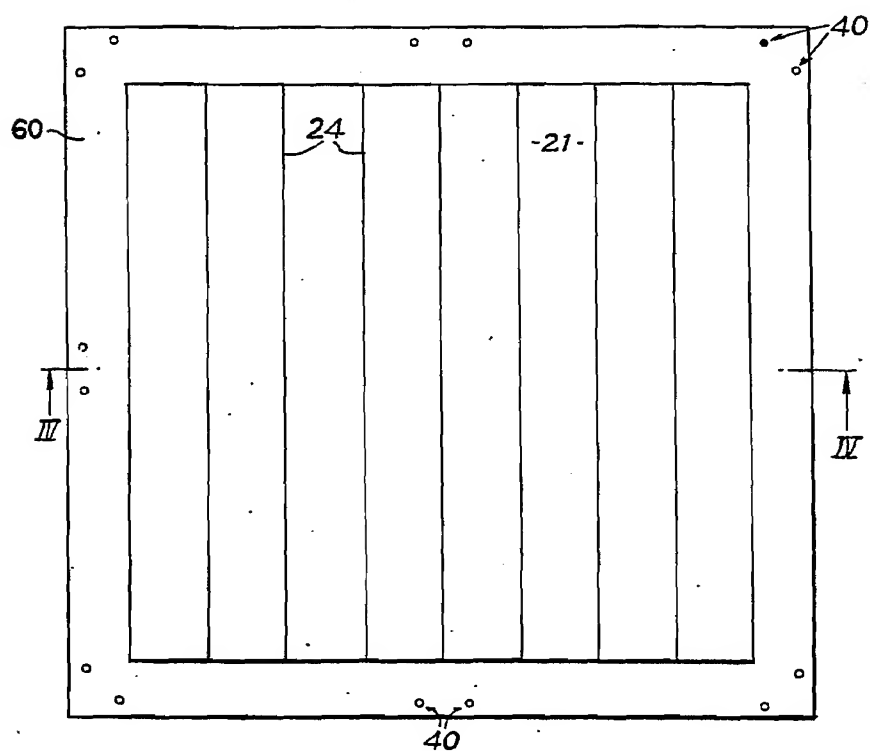


Fig. 3.

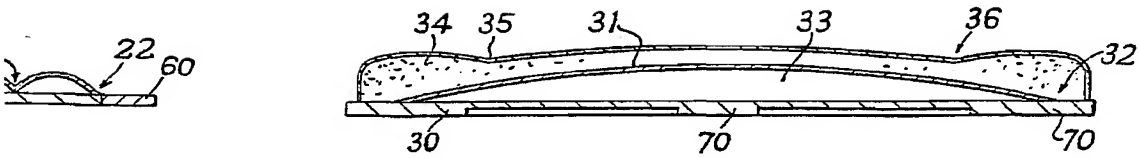


Fig. 6.

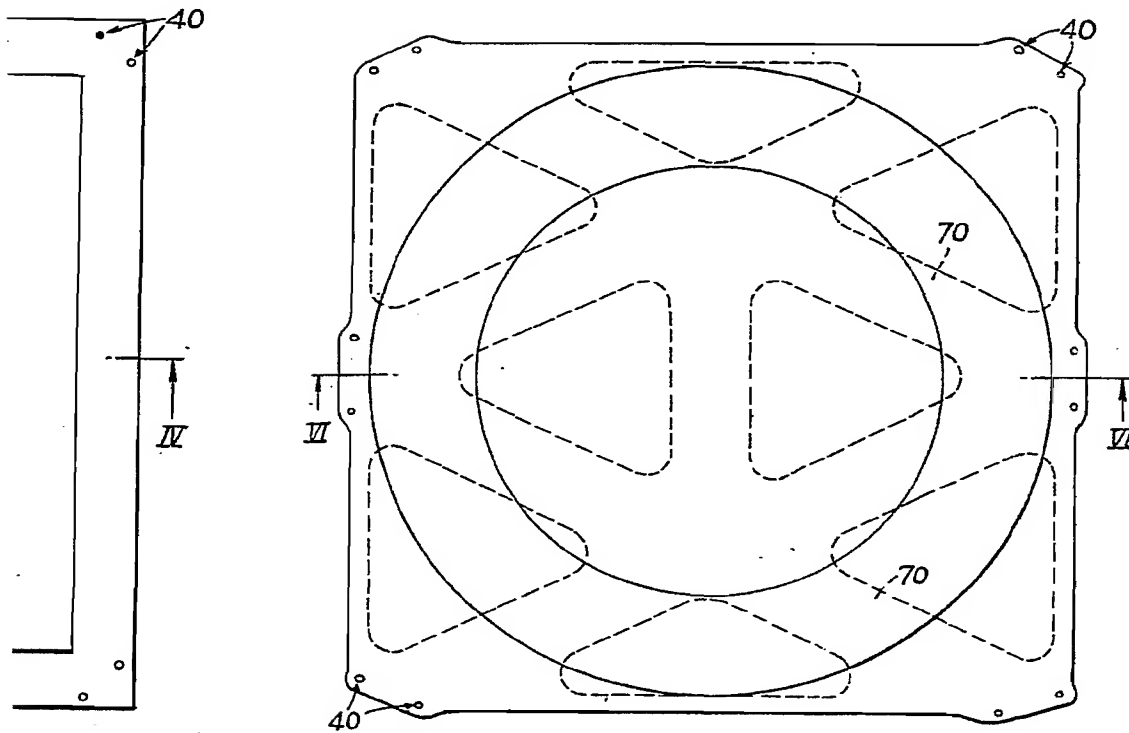


Fig. 5.

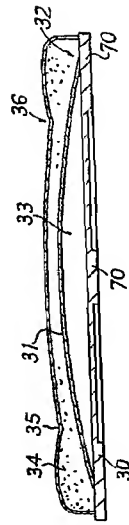


Fig. 6.



Fig. 4.

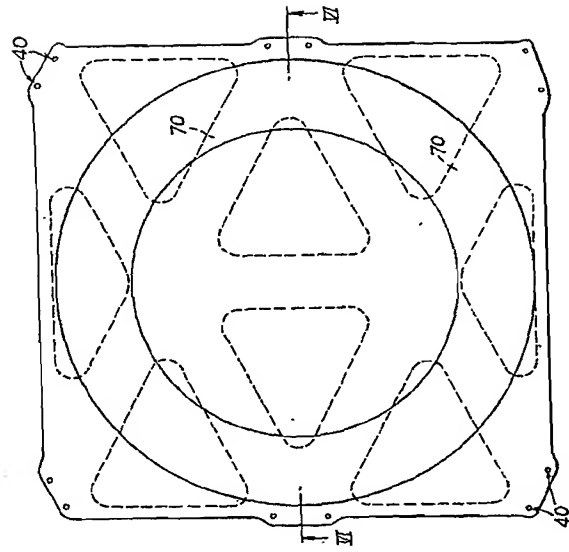


Fig. 5.

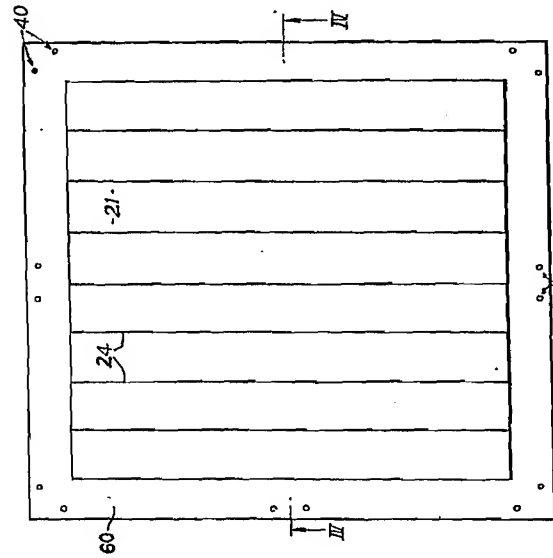


Fig. 3.